**Design** UNIT III Tasks and Assessment Criteria 9 grade 2015 - 2016

**Criteria A: Inquiry and Analyzing**

1. **explain** and **justify** the need for a solution to a problem
2. **construct** a research plan, which states and prioritizes the primary and secondary research needed to develop a solution to the problem
3. **analyse** a group of similar products that inspire a solution to the problem

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| **TASKS** |  |
|  | Research Solar Cells. Structure. Uses. Chemistry |
|  | Photovoltaic energy. Visual information. |
|  | Inquiry questions – Answers |
|  | Homework. Six images of existing products. Links |
|  | Analysis of existing products – Four products and four aspects |

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| **Level of Achievement** | **Description** |
| 0 | The student **does not** reach a standard described by any of the descriptors below. |
| 1 - 2 | * **states** the need for a solution to a problem with solar panels implementation on a design * **states some of** the main findings of relevant research. |
| 3 – 4 | * **outlines** the need for a solution to a problem with solar panels implementation in a design * **states** the research needed to **develop** a solution to the implementation of solar panels to a problem, **with some guidance** * **outlines one existing** product that inspires a solution to the implementation of solar panels in a design |
| 1. – 6 | * **explains** the need for a solution to the implementation of solar panels in a design * **constructs** a research plan to **develop** a solution to the implementation of solar panels in a design, **with some guidance** * **describes** a group of similar products that inspire a solution to the implementation of solar panels in a design |
| 7 – 8 | * **explains** and **justifies** the need for a solution to the implementation of solar panels in a design * **constructs** a research plan to **develop** a solution to the implementation of solar panels in a design **independently** * **analyses** a group of similar products that inspire a solution to the problem |

**Criteria B: Developing ideas**

1. develop a design specification which outlines the success criteria for the design of a solution
2. present a range of feasible design ideas, which can be correctly interpreted by others
3. present the chosen design and outline the reasons for its selection
4. develop accurate and detailed planning drawings/diagrams and outline the requirements for the creation of the chosen solution.

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| **TASKS** |  |
|  | Individual. One sketch, 3 views, 3D and create five specifications for the solution |
|  | In group. Three sketches with details. Advantages vs. Disadvantages chart. (Dimensions – Materials) |
|  | Describe the reasons for the final selection |
|  | Analysis of existing products – Chart. Four products and four aspects |

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| **Level of Achievement** | **Description** |
| 0 | The student **does not** reach a standard described by any of the descriptors below. |
| 1 - 2 | * **lists** a few basic success criteria for the design of the solar source of energy solution * **presents** one design idea, which can be interpreted by others * **creates** incomplete planning drawings/diagrams. |
| 3 – 4 | * **constructs** a list of the success criteria for the design of a solar source of energy solution * **presents a few** feasible design ideas, using an appropriate medium(s) **or explains** key features, which can be interpreted by others * **outlines** the **main** reasons for choosing the design with reference to the design specification |
| 5 – 6 | * **develops** design specifications, which **identify** the success criteria for the design of a solar source of energy solution * **presents a range of** feasible design ideas, using an appropriate medium(s) **and explains** key features, which can be interpreted by others * **presents** the chosen design and **outlines** the **main** reasons for its selection with reference to the design specification |
| 7 – 8 | * **develops** a design specification which **outlines** the success criteria for the design of a solar source of energy solution based on the data collected * **presents** a range of feasible design ideas, using an appropriate medium(s) **and annotation**, which can be correctly interpreted by others * **presents** the chosen design and **outlines** the reasons for its selection with reference to the design specification |

**Criteria C: Creating the solution**

1. construct a logical plan, which outlines the efficient use of time and resources, sufficient for peers to be able to follow to create the solution
2. demonstrate excellent technical skills when making the solution
3. follow the plan to create the solution, which functions as intended
4. explain changes made to the chosen design and the plan when making the solution
5. present the solution as a whole.

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| **TASKS** |  |
|  | Plan or method in detail to develop the solar panel solution (Including materials, tools and time) |
|  | Development Individual technical skills (Workshop) |
|  | Verify steps for the construction of the product |
|  | Present the design as a unit |

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| **Level of Achievement** | **Description** |
| 0 | The student **does not** reach a standard described by any of the descriptors below. |
| 1 - 2 | * **demonstrates minimal** technical skills when making the solar source of energy solution * **creates** the solution, which functions **poorly** and is presented **in an incomplete form**. |
| 3 – 4 | * **outlines** each step in a plan that contains some details, resulting in peers having difficulty following the plan to create the solar source of energy solution * **demonstrates satisfactory** technical skills when making the solution * **creates** the solution, which **partially** functions and is **adequately** presented * **outlines** changes made to the chosen design **or** plan when making the solar source of energy solution. |
| 5 – 6 | * **constructs** a plan, which **considers** time and resources, sufficient for peers to be able to follow to create the solution * **demonstrates competent** technical skills when making the solution * **creates** the solution, which functions **as intended** and is presented **appropriately** * **outlines** changes made to the chosen design **and** plan when making the solar source of energy solution. |
| 7 – 8 | * **constructs** a **logical** plan, which **outlines** the efficient use of time and resources, sufficient for peers to be able to follow to create the solution * **demonstrates excellent** technical skills when making the solution * follows the plan to **create** the solution, which functions **as intended** and  is presented **appropriately** * **explains** changes made to the chosen design and plan when making the solution. |

**Criteria D: Evaluating**

1. explain the success of the solution against the design specification
2. describe how the solution could be improved

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| **TASKS** |  |
|  | Create a parallel between specifications and the product |
|  | Changes and improvements in detail |

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| **Level of Achievement** | **Description** |
| 0 | The student **does not** reach a standard described by any of the descriptors below. |
| 1 - 2 | * **states** the success of the product. |
| 3 – 4 | * **outlines** the success of the solution against the design specification (Teacher and student specifications – Total of 10) * **lists** the ways in which the solution could be improved |
| 5 – 6 | * **describes** the success of the solution against the design specification (Teacher and student specifications – Total of 10) * **outlines** how the solution could be improved |
| 1. – 8 | * **explains** the success of the solution **against the design specification**  (Teacher and student specifications – Total of 10) * **describes** how the solution could be improved. |